SENR Environmental Science

121 Hours – Autumn Semester 2017

COURSE & NUMBER	Units		COURSE & NUMBER	Units	
UNIVERSITY REQUIREMENTS (GE)			**SENR REQUIREMENTS**		
Writing Skills	**6 Hours**		***SENR CORE REQUIREMENTS***	**22 Hours**	
English 1110 (First Year Writing Course)	3		ENR 1100 (ENR Survey)	1	
ENR 2367 (Communicating Environmental and Natural Resources Information) or equivalent GE Writing & Comm: Level 2)	3		ENR 2100 (Intro to Environmental Science)	3	
Arts & Humanities	**12 Hours**		ENR 2300 (Society and Natural Resources)	3	
GE Literature Course ●▲	3		ENR 3300 (Intro to Forestry, Fisheries & Wildlife)	3	
GE Arts Course ● ▲	3		ENR 3400 (Psychology of Environmental Problems) **or** ENR 3500 (Community, Environment & Development)	3	
GE History Course ● ▲	3		ENR 3200 (Natural Resources Policy)	3	
GE Culture & Ideas or other Humanities course ● ▲ [Recommended: ENR 3470 (Religion & Environmental Values in America]	3		ENR 3700 (Intro to Spatial Info for Natural Resources)	3	
Social Sciences	**6 Hours**		ENR 4900.01 or ENR 4900.02 (Senior Capstone) (Natural Resources Management)	3	
Rural Sociology 1500 ● (Recommended) or GE Social Science ● ▲	3		***Environmental Science Major Requirements***	**10 Hours**	
AED Econ 2001 or Economics 2001.01 (Microeconomics)	3		Chemistry 2310 (Intro Organic Chemistry)	4	
Diversity Courses (Overlap with Arts & Humanities GE)	**overlapping**		EEOB 3410 (Intro to Ecology)	4	
Social Diversity in US ●	**----**		ENR 3280 (Water Quality Management)	2	
Global Studies Course 1 ▲	**----**		***Environmental Science Specializations:***	**26 Hours**	
Global Studies Course 2 ▲	**----**		*Ecosystem Restoration*		
Data Analysis, Quantitative & Logical Skills	**8 Hours**		*Environmental Molecular Science*		
ENR 2000 (Recommended) or STAT 1450 or other approved GE Data Analysis course	3		*Soil Resources & Environmental Sustainability*		
Math 1151 or 1156 (Calculus for the Biological Sciences)	5		*Water Science*		
Natural Sciences	**31 Hours**				
Chemistry 1210 (General Chemistry I)	5				
Chemistry 1220 (General Chemistry II)	5				
Biology 1113 (Biological Sciences: Energy Transfer & Development)	4				
Biology 1114 (Biological Sciences: Form, Function, Diversity, & Ecology) or an additional Biological Science or Physical Science Course	4				
Earth Sciences 1121 (The Dynamic Earth) & Earth Sciences 1200 (Intro to Earth Sciences Lab)*	4				
Physics 1200 (Mechanics, Kinematics, Fluids, Waves)	5				
ENR 3000 (Soil Science)	3				
ENR 3001 (Soil Science Laboratory)	1				
Free Electives	**0 Hours**		**MINIMUM HRS FOR GRADUATION**	**121 Hours**	

*Starting AU21 EARTHSC 1200 must be completed with EARTHSC 1121 to satisfy the lab requirement.

Updated 4/27/21

Ecosystem Restoration Specialization	Units	
Principles and Practice of Restoration	**7**	
Required:		
ENR 3800 Principles and Tools of Ecological Restoration	2	
ENR 4800 Practical Skills for Terrestrial Ecosystem Restoration	2	
ENR 5560 Rehabilitation/Restoration of Ecosystems	3	
Ecosystem Science – *take 3-4 credit hours from each of the following two sub-categories:*	**6 - 8**	
Ecology of Terrestrial Ecosystems		
EEOB 5470 Community and Ecosystems Ecology *(Recommended)*	3	
ENR 3322 Forest Ecosystems *or* ENR 5340 Forest Ecosystem Management	3	
ENR 5263 Biology of Soil Ecosystems	3	
MICRBIO 5155 Environmental Microbiology	3	
ENR/ENVENG/FABENG 5310 Ecological Engineering & Science	4	
HCS 2204 &2205 (previously 2201 Ecology of Managed Plant Systems)	4	
HCS 5422 Biology and Management of Weeds and Invasive Plants	3	
HCS 5412 Agroecology of Grasslands and Prairies	3	
PLNTPTH/ENTMLGY 5110 Ecology and Management of Pathogens and Insects Affecting Trees in Forest and Urban Environments	3	
HCS 5602 The Ecology of Agriculture	3	
HCS 5730 Seed Ecology and Physiology	3	
Ecology of Aquatic & Wetland Ecosystems		
EEOB 5420 Ecology of Inland Waters	4	
ENR 4285 Watershed Hydrology	3	
ENR 5250.01 Wetland Ecology and Management	3	
ENR 5250.02 Wetland Field Laboratory	1	
ENR 5280 Stream Ecology	4	
Resource Management and Conservation – *take 2 - 3 credit hours from any of the following three sub-categories:*	**2 - 3**	
Ecosystem Management and Conservation		
EEOB 2410 Biological Invasions: The Ecology and Evolution of Species Introductions	3	
ENR 3335.01 Introduction to Wildland Fire Management	2	
ENR 3335.02 Wildland Fire Management Laboratory	1	
ENR 5340 Forest Ecosystem Management	3	
ENR 4342 Freshwater Fisheries Management	3	
ENR 5370 Management of Wildlife Habitat	3	
HCS 5422 Biology and Management of Weeds and Invasive Plants	3	
AGSYSMT 2370 Environmental Hydrology	2	
Soil Resource Management and Conservation		
ENR 4260 Soil Resource Management	3	
ENR 5262 Environmental Soil Chemistry and Remediation	3	
ENR 5268 Soils and Climate Change	2	
ENR 5270 Soil Fertility	3	
ENR 5273 Environmental Fate and Impact of Contaminants in Soil and Water	3	
Plant Production for Restoration		
HCS 3320 Plant Propagation: The Manipulation of Plant Reproduction	3	
HCS 3420 Seed Science	3	
HCS 3521 Basic Greenhouse Production	2	

Field Monitoring and Assessment for Ecosystem Restoration: *take ENR 5279 and one additional course for 2-3 hours*	**5 - 7**	
Required:		
ENR 5279 Urban Soils and Ecosystem Services: Assessment and Restoration	3	
Choose 1 additional Field Monitoring and Assessment course for 2-3 hours		
EEOB 4430 Ecological Methods I *(Recommended)*	2	
ENR 5260 Soil Landscapes: Morphology, Genesis and Classification	3	
ENR 3323 Forest Biometrics	3	
ENR 4345 Methods in Aquatic Ecology	4	
ENR 5362 Wildlife Ecology Methods	3	
EEOB 4950 Field Ecology	2	
Species Ecology, Identification and Recording	**2 - 3**	
Choose 1 of the following courses:		
ENR 4610 Natural History of Ohio *(Recommended)*	3	
ENR 3321 Biol & ID of Woody Plants *or* EEOB 2210 OH Plants *or* HCS 2340 Landscp Plants *or* HCS 2202 Form & Func of Cultivated Plants	2-3	
ENR 5350.01 Taxonomy & Behavior of Aquatic Inverts. *or* ENTMLGY 4000 General Entomology	3	
ENR 5350.02 Taxonomy & Behavior of Fishes	3	
ENR 5364.01 Mammalian Wildlife Biology and Management	3	
ENR 5364.02 Avian Wildlife Biology & Management *or* ENR 2360 Ecology & Conservation of Birds (Stone Lab) *or* EEOB 2220 Ohio Birds	2-3	
PLNTPTH 5040 and PLNTPTH 5041 Science of Fungi: Mycology Lecture and Science of Fungi: Mycology Lab	4	
Directed Electives*	**0 - 4**	
If you have not met the 26-hour minimum for the specialization, choose courses that you have not already taken from any of the following categories:		
Ecosystem Science (refer to previous page)		
Resource Management and Conservation (refer to previous page)		
Ecosystem History and Environmental Change		
ANTHROP 5614 Ethnobotany	3	
ANTHROP 5623 Environmental Anthropology	3	
ANTHROP 3350 Prehistoric Indians of the Ohio Valley	3	
GEOG 3900 Global Climate Change: Causes and Consequences	3	
PHIL 2342 Environmental Ethics	3	
Practical Experience in Restoration		
ENR 4191 or Professional Practice in Environment and Natural Resources ENR 4998 Undergraduate Research	1-3	
*Other courses may be added with faculty advisor approval		
University GE Total/SENR Core Total	**95**	
Ecosystem Restoration Specialization Total	**26**	
Degree Total	**121**	

Note regarding GE requirements: For the ecosystem restoration specialization, we recommend considering the following courses to meet GE requirements:

GE Culture & Ideas	LARCH 2367 Making and Meaning of the American Landscape
GE History	HISTORY 3700 American Environmental History
GE History/GE Global Studies	HISTORY 2700 Global Environmental History
GE Global Studies	ANTHROP 2201 Introduction to Archeology

Environmental Molecular Sciences Specialization	Units	
Biological Sciences	**5 - 9**	
Required (select 1)	3-4	
MICRBIO 4000 Basic & Practical Microbiology	4	
MOLGEN 5630 Plant Physiology	3	
Electives (select 1)	2-5	
MICRBIO 4100 General Microbiology	5	
MICRBIO 5155 Environmental Microbiology	3	
MICRBIO 5169H Honors Research in Microbiology	1-5	
MICRBIO 5161H Bioinformatics & Molecular Microbiology	3	
MOLGEN 5630 Plant Physiology	3	
PLNTPTH 3001 General Plant Pathology Lecture	3	
PLNTPTH 5010 Phytobacteriology	2	
PLNTPTH 5040 & 5041 Science of Fungi: Mycology Lecture & Lab	4	
Environmental Science	**6**	
Required (select 1)	3	
ENR 5262 Environmental Soil Chemistry and Remediation	3	
Electives (select 1)	3	
ENR 5263 Biology of Soil Ecosystems	3	
ENR 5273 Environmental Fate & Impact of Contaminants in Soil & Water	3	
Geochemistry & Mineralogy	**6 - 7**	
Required (select 1)	3	
EARTHSC 4421 Earth Materials	3	
EARTHSC 5621 Introduction to Geochemistry	3	
Electives (select 1)	3-4	
EARTHSC 5628 Environmental Isotope Geochemistry	3	
EARTHSC 5651 Hydrogeology	4	
EARTHSC 5680 Deep Earth Geophysics	3	
Molecular Biology	**5 - 8**	
Required (select 1)	3-4	
BIOCHEM 4511 Introduction to Biological Chemistry	4	
BIOCHEM 5613 Biochemistry & Molecular Biology I	3	
MOLGEN 4500 General Genetics	3	
Electives (select 1)	2-4	
BIOCHEM 5614 Biochemistry & Molecular Biology II	3	
MICRBIO 4130 Microbial Genetics	3	
MICRBIO 4140 Molecular Microbiology Laboratory	3	
MOLGEN 4606 Molecular Genetics	4	
MOLGEN 5607 Cell Biology or MOLGEN 5607E Cell Biology	3	
MOLGEN 5623 Genetics and Genomics	2	
Directed Electives	**0-5**	

University GE Total/SENR Core Total	**95**	
Environmental Molecular Sciences Specialization Total	**26**	
Degree Total	**121**	

Soil Resources and Environmental Sustainability Specialization	Units	
Required Courses	**17 - 19**	
ENR 5261 Environmental Soil Physics	3	
AGSYSMGT 2370 Environmental Hydrology **or** Earth Sciences 5550 Geomorphology	2-4	
ENR 5260 Soil Landscapes: Morphology, Genesis & Classification	3	
ENR 5262 Environmental Soil Chemistry and Remediation	3	
ENR 5263 Biology of Soil Ecosystems	3	
ENR 5270 Soil Fertility **or** ENR 4260 Soil Resource Management	3	
Directed Electives	**7-9**	
ENVENG 2100 Environmental Engineering Analytical Methods	3	
CIVILEN 5130 Applied Hydrology	3	
EARTHSCI 5651 Hydrogeology	4	
ENR 5280 Stream Ecology	4	
ENR 5250.01 Wetland Ecology and Restoration	3	
ENR 5210 US Environmental Impact Assessment	3	
ENR 5211 International Environmental Impact Assessment	3	
ENR 4345 Methods in Aquatic Ecology	4	
ENR 5271 Soils of Forest Ecosystems	3	
ENR 5451 Water Policy & Governance	3	
ENR 5273 Environmental Fate & Impact of Contaminants in Soil & Water	3	
ENR 5268 Soils and Climate Change	2	
ENR 5279 Urban Soils and Ecosystem Services: Assessment and Restoration	3	
ENR 5274 Ecosystems Simulation	3	
ENR 5560 Rehabilitation/Restoration of Ecosystems	3	
University GE Total/SENR Core Total	**95**	
Soil Resources and Environmental Sustainability Specialization Total	**26**	
Degree Total	**121**	

Water Science Specialization	Units	
Water Science Required Courses	**14**	
ENR 5280 Stream Ecology	4	
ENR 4345 Methods in Aquatic Ecology	4	
ENR 4285 Watershed Hydrology	3	
ENR 5273 Environmental Fate & Impact of Contaminants in Soil & Water	3	
Water Resource and Management Courses (select 4)	**10 - 14**	
ENR 5250.01 Wetland Ecology & Restoration	3	
AGSYSMGT 2370 Environmental Hydrology	2	
ENR 5350.01 Taxonomy and Behavior of Aquatic Invertebrates	3	
ENR 5350.02 Taxonomy and Behavior of Fishes	3	
ENR 5355 Aquaculture	3	
ENR 5348 Conservation and Management of Aquatic Populations	3	
ENR 5358 Applied Vertebrate Physiological Ecology	3	
ENR 4342 Freshwater Fisheries Management	3	
ENR 3800 Principles and Tools of Ecosystem Restoration	2	
EEOB 5420 Ecology of Inland Waters **or** EEOB 5430 Aquatic Ecosystems - Fish Ecology	3 - 4	
ENR/ENVENG/FABENG 5310 Ecological Engineering & Science	4	
EARTHSCI 2206 Principles of Oceanography	3	
EARTHSCI 4450 Water, Ice and Energy in the Earth System	3	
GEOG 5210 Fundamentals of Geographic Information Systems	3	
Directed Electives	**0-2**	
University GE Total/SENR Core Total	**95**	
Water Science Specialization Total	**26**	
Degree Total	**121**	